



TITLE

**INDUCTION OF LABOUR: CERVICAL RIPENING**

SCOPE

Provincial: Women's and Infant Health

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**NOTE:** The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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## OBJECTIVES

- To provide guidance to the **health care professional** on the administration and management of mechanical and medical **cervical ripening** agents to women to increase the likelihood of a vaginal delivery.

## PRINCIPLES

- All **patients** shall be offered information about the risks, benefits, and alternatives associated with **induction of labour** via cervical ripening to ensure informed consent is obtained as per the Alberta Health Services (AHS) *Consent to Treatment/Procedure(s)* Policy suite.
- Arrangements and support for pain relief options shall be discussed with the patient.
- A plan for non-progressive or unsuccessful induction of labour shall be discussed and options provided for the patient.
- Alternative options to induction of labour should be explored if the woman chooses not to have an induction of labour.

## APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, Students, Volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

**ELEMENTS****1. Points of Emphasis**

- 1.1 The **most responsible health practitioner (MRHP)** shall determine if induction of labour is indicated when the risk to the patient and/or fetus of continuing the pregnancy exceeds the risk associated with induction of labour. Reasons for induction must be compelling, convincing, and documented.
- 1.2 Cervical ripening by use of a pharmacological agent or other means is used to soften, efface, and/or dilate the cervix in order to increase the likelihood of a vaginal delivery.

**2. Indications for Induction of Labour with Cervical Ripening**

- 2.1 Cervical ripening by balloon devices is indicated in those patients with a Bishop Score of less than six (6).
- 2.2 Cervical ripening by prostaglandin is indicated in those patients with a Bishop Score of less than, equal to or greater than six (6).
- 2.3 Induction of labour is contingent on a normal classification of an electronic fetal monitoring tracing.
- 2.4 High priority indications include:
- a) suspected fetal compromise;
  - b) severe pre-eclampsia or eclampsia;
  - c) significant maternal disease that may put the patient or fetus at risk and is not responding to treatment;
  - d) significant but stable antepartum hemorrhage;
  - e) chorioamnionitis; and/or
  - f) term rupture of membranes with positive culture of maternal group B *Streptococcus* (GBS).
- 2.5 Other indications include:
- a) estimated weeks of gestation greater than 41 weeks;
  - b) uncomplicated twin pregnancy estimated weeks of gestation greater than 38 weeks;
  - c) diabetes mellitus – level of glucose control with other maternal/fetal co-morbidities may determine urgency;

- d) alloimmune disease at or near full-term;
- e) intrauterine growth restriction;
- f) oligohydramnios;
- g) gestational hypertension estimated weeks of gestation greater than or equal to 38 weeks; and/or
- h) intrauterine death.

### 3. Contraindications to Induction of Labour by Cervical Ripening

3.1 Any contraindication for vaginal birth including but not limited to:

- a) placenta previa, vasa previa, or a cord presentation;
- b) abnormal fetal lie or presentation (e.g., a transverse lie or footling breech);
- c) prior classical Caesarean section or inverted “T” uterine incision;
- d) significant previous uterine surgery (i.e., full thickness myometrial incision);
- e) active genital herpes simplex virus;
- f) pelvic structural deformities;
- g) invasive cervical carcinoma; and/or
- h) previous uterine rupture;
- i) estimated weeks of gestation of less than 35 weeks;
- j) known hypersensitivity to dinoprostone or its constituents;
- k) abnormal fetal heart rate; and/or
- l) regular contractions.

### 4. Situations Where Benefit of Induction is Uncertain

4.1 Induction on the sole basis of suspected fetal macrosomia (large birth weight for gestational age) is not recommended.

4.2 Advanced maternal age:

- a) Greater than 40 years of age may be an indication for induction of labour at estimated weeks of gestation of 39 to 40 weeks if concurrent medical co-morbidities exist and the patient is nulliparous.

- 4.3 Maternal obesity:
- a) Body Mass Index (BMI) greater than 40 (i.e., Obese class III) is not an indication for induction of labour unless concurrent medical co-morbidities exist or there are other indications that induction of labour is required.
- 4.4 **Health care provider** or patient convenience.

## 5. Responsibilities of the Most Responsible Health Practitioner for Induction by Cervical Ripening

- 5.1 Provide an **order** to initiate cervical ripening.
- 5.2 Book an outpatient or inpatient procedure appointment for the patient.
- 5.3 Complete and document a thorough clinical evaluation of the patient and fetus which includes:
- a) review of maternal history including parity (prior vaginal delivery), BMI, maternal age, estimated fetal weight, and history of diabetes;
  - b) confirmation of gestational age;
  - c) vaginal examination to assess cervix;
  - d) calculation of Bishop Score;
  - e) confirmation of vertex presentation; and
  - f) review of maternal temperature, pulse, respirations, blood pressure, and fetal heart rate measurements.
- 5.4 Ensure that appropriate laboratory tests have been completed and results are readily available for patients with:
- a) pre-eclampsia;
  - b) obstetrical complications; and/or
  - c) other medical conditions.
- 5.5 Obtain informed consent in accordance with the AHS *Consent to Treatment/Procedure(s)* Policy suite.
- 5.6 Consider an obstetrical consultation when gestational age is less than 37 weeks or when expected date of confinement is in question (see AHS *Care of Late Preterm Infants* Guideline).
- 5.7 The MRHP shall confirm the availability of the Caesarean section resource, should it be required.

- 5.8 Be readily available should oxytocin induction/augmentation be required (see *AHS Induction/Augmentation of Labour with Oxytocin* Guideline).
- 5.9 The Registered Nurse (RN) or Registered Midwife (RM) shall:
- a) review maternal history (e.g., gestational age, fetal presentation, Bishop Score, current and past obstetrical history);
  - b) complete a maternal and fetal assessment including:
    - (i) maternal vital signs (e.g., temperature, pulse, respirations, and blood pressure);
    - (ii) fetal heart rate (FHR); and
    - (iii) uterine activity;
  - c) obtain and classify an electronic fetal monitor (EFM) tracing (minimum of 20 minutes) prior to induction via cervical ripening; and
  - d) provide initial and ongoing patient education, instructing the patient having cervical ripening by insert of misoprostol, balloon devices, or prostaglandins to:
    - (i) empty the bladder prior to the cervical ripening procedure;
    - (ii) remain in bed for 60 minutes post-insertion;
    - (iii) pat dry following voids; and
    - (iv) notify the nurse of any significant change in labour (e.g., spontaneous rupture of membranes, onset of contractions, pain, balloon falls out, or other concerns).

## 6. Cervical Ripening with Misoprostol (SOGC)

- 6.1 The MRHP shall confirm that Caesarean section is available prior to initiating misoprostol.
- 6.2 Misoprostol can be considered a safe and effective agent for labour induction with intact membranes and when used on an inpatient basis.
- 6.3 Misoprostol should not be used in the setting of vaginal birth after Caesarean section due to the increased risk of uterine rupture.
- 6.4 The oral and vaginal routes have a similar reduction of Caesarean section rates. The oral route needs more oxytocin stimulation but the vaginal route will have more **tachysystole**.

- 6.5 Oxytocin should not be started earlier than four (4) hours after the last dose of misoprostol.
- 6.6 The lower vaginal dose (25 micrograms [mcg]) tends to need more oxytocin stimulation and the higher vaginal dose (greater than [ $\geq$ ] 50 mcg) tends to have more uterine tachysystole.
- 6.7 Pharmaceutical support to ensure accurate splitting of dosage is required.
- 6.8 All doses of misoprostol can cause uterine tachysystole.
- 6.9 Assessment of fetal well-being is required before administration of misoprostol. Electronic fetal monitoring should be performed for 30 to 60 minutes after administration of misoprostol and for 60 minutes after any tachysystole.
- 7. Cervical Ripening by Balloon Device Insertion**
- 7.1 Contraindication to balloon device insertion is:
- a) low-lying placenta.
- 7.2 Relative contraindications to balloon device insertion are:
- a) rupture of membranes; and/or
  - b) genital tract infection.
- 7.3 Using sterile technique, the MRHP shall insert the catheter past the internal orifice of the uterus (internal os) and inflate the balloon.
- 7.4 The MRHP shall retract the balloon to rest against the internal os and may secure the catheter to the patient's leg if required.
- 7.5 The catheter may be left in place up to 24 hours or it may spontaneously fall out.
- 7.6 Assess the patient continuously if bleeding or contractions occur.
- 8. Cervical Ripening with Dinoprostone (Prostaglandin E2 - Vaginal Insert or Gel)**
- 8.1 Contraindication for the use of dinoprostone gel:
- a) previous Caesarean section.
- 8.2 Use dinoprostone with caution in situations of:
- a) high parity;
  - b) multiple pregnancy;
  - c) ruptured membranes;

- d) fetal growth restriction;
  - e) oligohydramnios; or
  - f) maternal fever.
- 8.3 Possible adverse effects of dinoprostone include but are not limited to:
- a) uterine tachysystole;
  - b) fetal heart rate abnormalities;
  - c) maternal effects (i.e., fever, chills, vomiting, diarrhea); and/or
  - d) failure to achieve labour.
- 9. Administration of Prostaglandin PE2 (Vaginal Insert)**
- 9.1 The RN or RM shall position the patient for vaginal examination.
- 9.2 The MRHP with privileges in the induction of labour, shall insert a dinoprostone saturated tampon transversely into the posterior fornix of the vagina (avoid excessive use of lubricant) or insert the contents of one (1) syringe of prostaglandin E2 gel into the posterior fornix of the vagina.
- a) Dinoprostone gel should be kept in the fridge, Cervidil inserts in the freezer. Do not warm prior to insertion.
- 9.3 The RN or RM shall return the patient to a comfortable position, preferably lateral or with a wedge under the patient's right hip, raising the head of the bed to no more than 30 degrees.
- 9.4 The patient shall remain in bed for a minimum of one (1) hour post-insertion.
- 9.5 The RN or RM shall monitor maternal status, uterine activity pattern, and atypical pain that may indicate uterine rupture, for 60 minutes post-insertion unless otherwise indicated.
- 9.6 The RN or RM shall monitor fetal status by EFM for at least one (1) hour post-insertion or longer if uterine activity is noted. Prior to ordered discharge, confirm fetal well-being with intermittent auscultation unless otherwise indicated.
- 9.7 Notify the MRHP if:
- a) membranes rupture spontaneously;
  - b) labour commences;
  - c) fetal heart rate pattern is atypical or abnormal; and/or

- d) there are abnormal contraction patterns.
- 9.8 Dinoprostone may be administered on an outpatient basis to those patients who:
- a) do not have any identified obstetrical risk factors;
  - b) are able to travel to a hospital within 30 minutes;
  - c) have an EFM tracing classified as normal prior to ripening and following insertion; and
  - d) have maternal vital signs within normal limits.
- 9.9 Low-risk patients may be discharged with instructions to return to hospital immediately if:
- a) contractions are every five (5) minutes or less;
  - b) membranes rupture;
  - c) bright red vaginal bleeding occurs;
  - d) the insert falls out; and/or
  - e) there are any other concerns.
- 9.10 Dinoprostone gel may be repeated in six (6) to twelve hours if there is minimal uterine activity. The minimum time between dosages is six (6) hours and an order is required.
- 9.11 For patients who are not deemed low-risk and do not qualify for a pass, monitor maternal and fetal status according to stage of labour and level of risk. If active labour is established, initiate partogram.

## 10. Abnormal Contraction Patterns

- 10.1 The RN shall notify the MRHP if there are any abnormal contraction patterns including but not limited to:
- a) more than five (5) contractions in a 10-minute window averaged over a 30-minute period (tachysystole);
  - b) doubling or tripling of contractions;
  - c) resting period between contractions of less than 30 seconds or the uterus does not relax between contractions; and/or
  - d) prolonged contractions lasting more than 90 seconds.

## 11. Management of Abnormal Contraction Patterns

11.1 Tachysystole shall be confirmed by an interpreted electronic EFM tracing and abdominal palpation.

11.2 Management of tachysystole with an abnormal EFM tracing includes:

- a) stopping the source of stimulation:
  - (i) if Cervidil in place, remove the tampon; or
  - (ii) if dinoprostone gel in place, attempt to wipe or flush it from the posterior fornix;
- b) implementing intrauterine resuscitative measures including:
  - (i) maternal position changes; and
  - (ii) improving maternal hydration with an intravenous fluid bolus if indicated; and
- c) notifying the MRHP.

11.3 Prepare for expedited delivery should tachysystole not resolve.

## 12. Removal of Tampon or Gel Insert

12.1 In consultation with the MRHP, consider removing the insert:

- a) when the patient is in established active labour;
- b) when 12 hours since administration or a maximum of 24 hours in-situ;
- c) when membrane rupture occurs;
- d) in cases of tachysystole as described above; and/or
- e) in the presence of an adverse fetal/maternal response.

**Note:** There shall be a 30 minute wait, following removal of the dinoprostone tampon, before starting oxytocin.

## 13. Documentation

13.1 Documentation in the patient's **health record** shall include but is not limited to:

- a) informed consent;
- b) maternal observations and assessments including blood pressure, pulse, respirations, and temperature;

- c) fetal heart rate, characteristics, and classifications of Electronic Fetal Monitoring (EFM) shall be done in accordance with the Canadian Fundamentals of *Fetal Health Surveillance Self Learning Module* self-learning module;
- d) initiation of cervical ripening and maternal and fetal responses or any other interventions;
- e) pain relief management; and
- f) patient teaching.

## DEFINITIONS

**Cervical ripening** means softening, effacing and/or dilating of the cervix by means of pharmacological or mechanical agents.

**Health care professional** means an individual who is a member of a regulated health discipline, as defined by the *Health Disciplines Act* (Alberta) or the *Health Professions Act* (Alberta), and who practises within scope and role.

**Health care provider** means any person who provides goods or services to a patient, inclusive of health care professionals, staff, students, volunteers and other persons acting on behalf of or in conjunction with Alberta Health Services.

**Health record** means the Alberta Health Services legal record of the patient's diagnostic, treatment and care information.

**Induction of labour** means the process of artificially stimulating the uterus to start labour. Membranes may be intact or ruptured. The goal of induction is to achieve vaginal delivery.

**Most responsible health practitioner (MRHP)** means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by Alberta Health Services to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of their practice.

**Order** means a direction given by a regulated health care professional to carry out specific activity(-ies) as part of the diagnostic and/or therapeutic care and treatment to the benefit of a patient. An order may be written (including handwritten and or electronic), verbal, by telephone or facsimile.

**Patient** means an adult or child who receives or has requested health care or services from Alberta Health Services and its health care providers or individuals authorized to act on behalf of Alberta Health Services. This term is inclusive of residents, clients and outpatients

**Tachysystole** means more than five (5) contractions in a ten minute window, averaged over a 30 minute period

**REFERENCES**

- Appendix A: *Induction Algorithm*
- Alberta Health Services Governance Documents:
  - *Care of Late Preterm Infants* Guideline (#HCS-200-01)
  - *Consent to Treatment/Procedure(s)* Policy and procedures (#PRR-01)
  - *Induction/Augmentation of Labour with Oxytocin* Guideline (#HCS-221-01)
- Alberta Health Services Resources
  - *Induction of Labour, Adult* Provincial Clinical Knowledge Topic (Clinical Knowledge & Content Management)
- Non-Alberta Health Services Documents:
  - *MORE<sup>OB</sup>* (Society of Obstetricians and Gynecologists of Canada [SOGC])

**VERSION HISTORY**

Date	Action Taken
November 30, 2018	Non-substantive change
December 20, 2018	Non-substantive change

**APPENDIX A**

**Induction Algorithm**

